DE LAPPARENT'S "MINERALOGY."

Cours de Minéralogie. Par A. de Lapparent. 2me édition. (Paris: F. Savy, 1890.)

SIX years have elapsed since our announcement in NATURE of the appearance of this book, and now the call for a second edition indicates the continually increasing popularity of the work, not only in France, but especially abroad, where more than half of the first edition has been sold. This popularity must be ascribed mainly to the fact that M. de Lapparent's "Cours de Minéralogie" was the first educational work in which the crystallographic theories of Bravais and Mallard were expounded as a system, and constituted, one may say, the basis of his lectures.

Now that these theories are continually obtaining a more favourable reception, it must be recognized that their diffusion has been largely effected by the present "Cours de Minéralogie," owing mainly to the remarkable power of exposition possessed by M. de Lapparent, of which he gave us a new proof when he published his lectures on mineralogy in 1884. The same quality is eminently conspicuous in this edition; but let us hasten to remark that the present is in reality a new work, which contains nearly 100 pages more than the first edition and a large number of new figures. A glance is sufficient to show that the author has not been content with revision, but has entirely reconstructed the book. He has so developed the optical portion that the volume becomes a sufficient introduction to the study of petrography, this chapter now containing a description of the refractometer, the quarter-wave-length mica, and Bertrand's plate; attention may also be directed to the paragraph on complex molecules (p. 22), and to the demonstration of the terquaternary system (p. 55); he has, moreover, grouped in a series of chapters, which constitute a homogeneous and strikingly uniform treatise on the subject, the elegant theories of Mallard upon twinning, isomorphism, and polymorphism. The description of species has been considerably increased, especially by the extended account of the rock-forming minerals; and the characters in microscopic sections of the minerals which are most important in lithology are illustrated by figures selected from the best authorities. In his own words, the author, taught by experience and knowing how necessary it is that numbers should be verified, has revised all the crystallographic data; he has given for each species the corresponding axial ratios after imposing upon himself the task of verifying by trigonometrical calculation the agreement of these ratios with the fundamental angles; and he has selected from the latest and best publications the optical data, such as double refraction, dispersion, principal indices of refraction, and the numbers which indicate the positions of the optic axes and bisectrices.

Finally the index has been subjected to careful revision, and has been augmented by 200 names which represent the progress of descriptive mineralogy during the last six years. Since, moreover, the chapter on calculation has been developed and contains all the formulæ in common use, the practical value of the book has been largely increased, and it should satisfy every requirement of the University student; it will prove of special service to geologists occupied with the study of rocks, the class of readers whom the author appears to have continually had in his mind in the composition of a treatise in which the geological bias is discernible both in the classification adopted, and in the manner in which the description of the rock-forming minerals has been developed.

In a word, this work not only affords a good general idea of all that constitutes modern mineralogy, but is also a useful introduction to the study of lithology.

We are convinced that the book, written with the remarkable lucidity and elegance which characterize the works of M. de Lapparent, is destined to occupy the same position in the study of mineralogy which in geology has been held by the same author's "Traité de Géologie." A. F. RENARD.

OUR BOOK SHELF.

Key to Higher Algebra. By H. S. Hall, M.A., and S. R. Knight, B.A. (London: Macmillan and Co., 1889.)

THIS work forms a key to the higher algebra, and contains solutions fully worked out of nearly all the examples. More than one solution of a problem is given in some cases, and throughout the book repeated references are made to the text and illustrative examples of the algebra. The volume will prove most useful to teachers, and we strongly recommend it to students who are beginning the study of algebra without the aid of a teacher, for, by first of all trying to work out the examples without the key, they may learn much by a careful and judicious use of the solutions afterwards.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

On the Use of the Word Antiparallel.

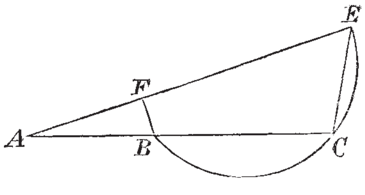
So much of the "recent geometry of the triangle" is connected with the properties of "antiparallels," that it is a matter of some interest to geometers to ascertain when they came to be recognized as worthy of a distinctive name, and when the name now in use was first applied. The following extracts afford two early instances, and seem to imply that the term "antiparallel" had, at the dates given, been some time in existence.

On p. 220 of Hutton's *Miscellanea Mathematica* (1775) occurs the following lemma by the Rev. Mr. Wildbore:—

"If two lines FB, EC be antiparallel, and through their extremities two right lines be drawn meeting each other in A, it will be as $AB^2 : AE^2 - AB^2 :: AB^2 - AF^2 : FE^2 - BC^2$";

and the demonstration begins as follows:—

"The < at B being *by the nature of antiparallel lines* the supplement of that at E, and F of C, a circle may, by Eucl. III. 22, be drawn through those four points."



After the lemma occurs this "Scholium":—

"The reader may from hence correct an error in 'Clark's Dictionary' under the word *antiparallels,* where it is said that the sides AE, AC are cut reciprocally proportional by the line FB; that is, AF : FE :: BC : AB, which is evidently wrong."

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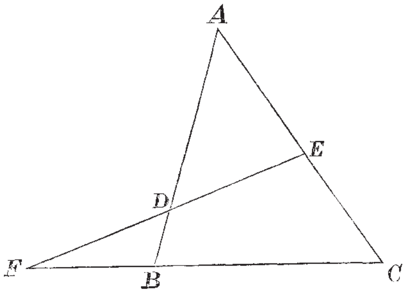
In Hutton's "Mathematical and Philosophical Dictionary" (1796) we find:—

"ANTIPARALLELS, in geometry, are those lines which make equal angles with two other lines but contrary ways; that is, calling the former pair the 1st and 2nd lines, and the latter pair the 3rd and 4th lines, if the angle made by the 1st and 3rd lines be equal to the angle made by the 2nd and 4th, and, contrariwise, the angle made by the 1st and 4th equal to the angle made by the 2nd and 3rd; then each pair of lines are antiparallels with respect to each other, viz. the 1st and 2nd, and the 3rd and 4th.



"So if AB and AC be any two lines, and FC, FE two others cutting them so that the angle B is equal to the angle E and the angle C is equal to the angle D; then BC and DE are antiparallels with respect to AB, AC; also these latter are antiparallels with respect to the two former."

It is curious also to note an error as regards the ratios of the segments of the sides, similar to but not identical with the one pointed out by the contributor to the *Miscellanea Mathematica* as occurring in "Clark's Dictionary"; for the next paragraph states:—

"It is a property of these lines that each pair cuts the other into proportionate segments, taking them alternately;

viz. AB : AC : : AE : AD : : DB : EC
and FE : FC : : FB : FD : : DE : BC."

Here the third ratio in each line is wrongly stated to be equal to the two which precede it; for keeping the triangle ABC and therefore also the direction of FE fixed, it is clear that the ratios AB : AC, AE : AD remain fixed, while DB : EC may range from zero to infinity.

E. M. LANGLEY.

The Force of "Example" in Animals.

SOME years ago we had two cats—a tabby, and a powerful tom perfectly white all over. One day I happened to be in the attic, and noticed them go out on the slates, when Tom jumped across the yard to the next roof. It appeared to me a splendid leap, considering the width of the yard and the height of the roof. When Tabby came to the edge of the slates her courage failed, and she uttered a cry of distress, whereupon Tom turned round and leaped back, and giving a cheerful mew as much as to say, "Look how easily it can be done," jumped across again, this time followed by Tabby, to my great delight.

φ.

"Astrarchia stephaniæ."

IN the interesting "Geographical Notes" from New Guinea, published in NATURE of September 5 (p. 449), it is stated that Sir William MacGregor procured, among others, "a female *Astrachia stephania*, the only male bird of that species being in the Museum, Berlin." Will you permit me to rectify this in communicating to you that the only male *Astrarchia stephaniæ* is in the Zoological Museum of Dresden. The bird was described and figured by Dr. Finsch and myself in the year 1885, and the name is correctly written as I have just given it.

Dresden, September 8. A. B. MEYER.

THE RECENT GREAT EARTHQUAKES IN JAPAN.

FULL details have now been received of the recent earthquakes in Japan. According to the report of the Governor of the Kumamoto district, in the Island of Kiushiu, the centre of the earthquake was a mountain situated to the west of Kumamoto, the chief town in the province of Higo. Knipo is one of a chain of volcanoes connected with Mount Aso, one of the most noted volcanoes in the country, which was visited and described a few years ago by Prof. Milne, who regards it as one of the two or three largest volcanoes in the world. No eruption, however, has ever as yet taken place there, but fears are now entertained of a terrible eruption; rumblings have been heard, and the mountain has discharged lava in several places. Aso Yama, or Mount Aso, has for many years been known as the only active volcano on the Island of Kiushiu. This mountain rises to a height of nearly 5000 feet. Its last eruption was in 1874, when a large quantity of grayish-white pumice ashes was discharged. It would seem, however, that more or less constant discharges have taken place at intervals ever since the premonitory signs. On the morning of July 28, the day of the destructive shock, the weather was agreeably cool, but at twilight the sky was clothed with a dark cloud tinged with a pale reddish colour, and the atmosphere became quite close. About ten minutes past eleven p.m. a noise as of thunder was heard. Simultaneously a strong earthquake movement commenced. As the nature of the shock was unusual, some of the inhabitants dressed, whilst others with scarcely any clothing, rushed from their houses, a number of them only to be crushed to death by falling walls and trees. The Castle of Kumamoto, which was the scene of the memorable siege by General Saigo at the time of the Kagoshima rebellion, and is noted for the solidity of its structure, was damaged in several parts. In the streets fissures appeared in several places, some of the cracks measuring six feet in width. In other parts of the town subsidences occurred; in some instances water was seen spouting from the fissures created by the seismological disturbance. There were several incipient fires caused by the overturning of lamps, but they were speedily extinguished, and much additional loss of property was thus avoided. Houses were overturned and the occupants killed. The first shock was soon followed by several smaller and two severe ones. With the break of day the dull cloud moved off, to leave the sky covered with yellowish little patches. The most severe shock was the first one, when even unusually strong houses were almost displaced from their foundations. Old houses and those not very strongly built were brought to the ground with sufficient force to kill, and in other cases injure numbers of persons. The losses sustained by chemists and china-ware merchants were large, owing to the breakage among their brittle stock. All wells in Kumamoto have either been rendered so foul with mud as to make them useless, or are dry by reason of the escape of water. The city is being temporarily forsaken by those who can afford to remove their families. In the town of Kumamoto the list of casualties is three persons crushed to death and six wounded. Twenty-two houses were thrown down and sixteen partially wrecked. In the neighbouring district of Akita, however, the force of the shock seems to have been felt more severely. Fifteen lives were lost, thirteen persons were injured, and thirty-two dwellings were overthrown, while many farmhouses were more or less damaged. In Sage, also a district of Kiushiu, there were underground sounds as of many cannons; then ensued prolonged vibrations from south to north-west, dwellings leaning over at inclinations varying from 70° to 80°, accompanied by loud crackling of posts and walls. The ground quivered so that pedestrians stumbled and fell. This shock continued for about four minutes. During the night there were two other disturbances, the last being the most severe. The greatest disorder and fright prevailed, and a night of terror was passed in the open air by the unclad population. In the districts of Sakanami and Kami-Tunaki the ground for a space of 9 acres began to

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